# ISTAR Math Sample Items
# for Grades 3-8 and 10

This document provides examples of the types of items on the *ISTAR Assessment.* The sample items can serve as models when teachers are constructing items for classroom assessment. It should be noted that this document is not a practice test.

On this website, http://www.doe.in.gov/assessment/alternate-assessments, you may access other critical Math information related to the ISTAR Assessments, such as:

- Test Blueprints
- Instructional and Assessment Guidance, including the Content Connectors

Because students with significant cognitive disabilities are a diverse population with a variety of needs, it was important to develop items across a broad range of abilities. Three levels of items were created, called "tiers".

- **Tier 1** - Tier 1 questions use simple and direct language. Graphics are provided for most answer choices, along with text, which give students a visual support to answer the questions.
- **Tier 2** - Tier 2 questions are more complex than those in Tier 1. More introductory phrases may be included in the questions and fewer graphics in the answer choices than in Tier 1. There is a greater level of complexity in how students respond to the questions than in Tier 1.
- **Tier 3** - Tier 3 includes more detailed directions and questions. There is more text and few to no graphics in the answer choices. There may be more abstract ideas and inferencing in Tier 3. There is more complexity in how students respond to the questions than in Tier 2.

There are six sample questions with two items at each tier for each grade written to targeted standards and the corresponding content connectors, which show how the standard would be assessed differently for each tier.

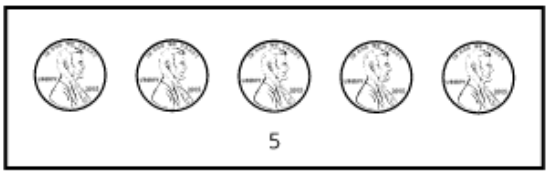
These sample items represents standards that may be assessed during ISTAR Part 1 (Jan/Feb) and ISTAR Part 2 (April/May).

# Grade 3 Mathematics Samples

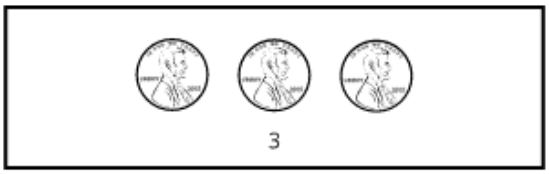
**Non-Secure Item***Non-Secure Item***Non-Secure Item***Non-Secure Item**
**ISTAR Sample for Classroom Use**

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 3 | **Tier:** 1 |
| **Key:** C | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.3.AT.1**<br>Solve real-world problems involving addition and subtraction of whole numbers within 1000 (e.g., by using drawings and equations with a symbol for the unknown number). | **Content Connector: 3.AT.1.a.1**<br>Use pictures and/or manipulatives to solve real-world one-step addition and subtraction word problems. |

Andy has 5 pennies.

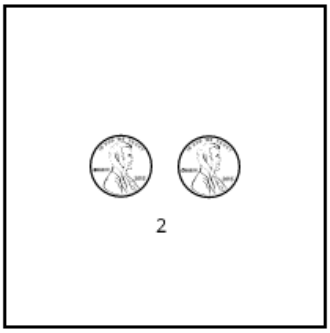



Then he finds 3 more pennies.

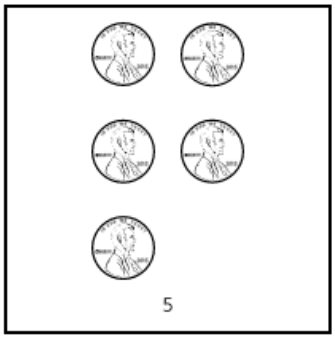



How many pennies does Andy have in all?

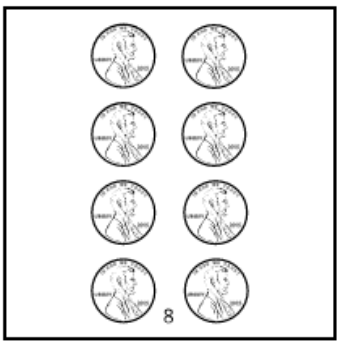
A




B

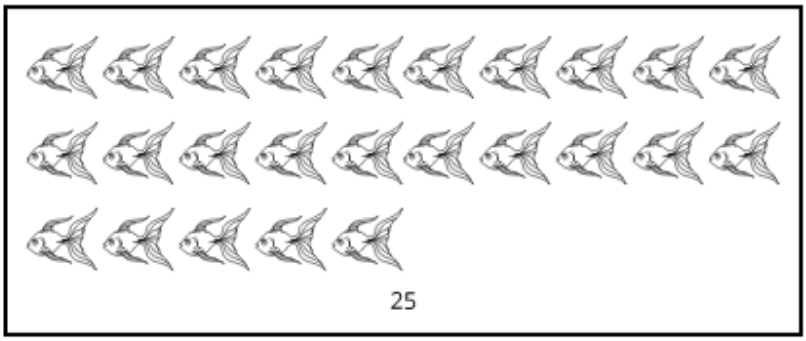



C



| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 3 | **Tier:** 2 |
| **Key:** A | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.3.AT.1**<br>Solve real-world problems involving addition and subtraction of whole numbers within 1000 (e.g., by using drawings and equations with a symbol for the unknown number). | **Content Connector: 3.AT.1.a.1**<br>Use pictures and/or manipulatives to solve real-world one-step addition and subtraction word problems. |

Megan sees 25 fish.




Then 4 fish swim away.

How many fish are left?

(A) 21 fish

(B) 25 fish

(C) 29 fish

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 3 | **Tier:** 3 |
| **Key:** A, B | **DOK:** 3 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.3.AT.1**<br>Solve real-world problems involving addition and subtraction of whole numbers within 1000 (e.g., by using drawings and equations with a symbol for the unknown number). | **Content Connector: 3.AT.1.a.1**<br>Use pictures and/or manipulatives to solve real-world one-step addition and subtraction word problems. |

The following is a two-part question. Answer Part A. Then answer Part B

**PART A**

Alison has 84 marbles. She gives 14 of them to a friend.

How many marbles does Alison have left?

Ⓐ 70

Ⓑ 84

Ⓒ 98

**PART B**

Alison has 84 marbles. She gives 14 of them to a friend.

Which equation can you use to find how many marbles Alison has left?

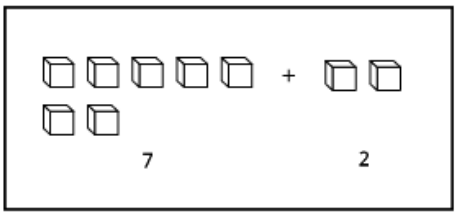
(A) 84 + 14 = ?

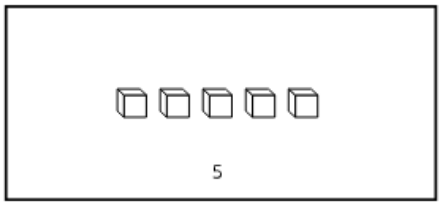
(B) 84 − 14 = ?

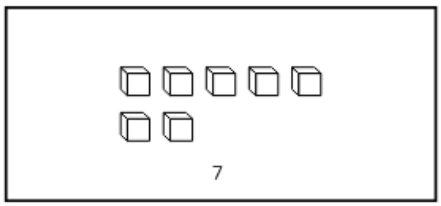
(C) ? − 14 = 84

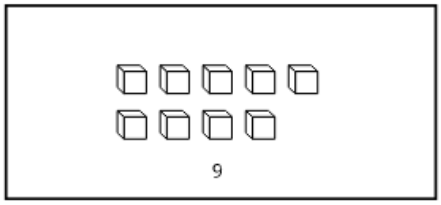
| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 3 | **Tier:** 1 |
| **Key:** C | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.3.C.1**<br>Add and subtract whole numbers fluently within 1000. | **Content Connector: 3.C.1.a.1**<br>Adding and subtracting whole numbers. |

**Add.**



Ⓐ 


Ⓑ 


Ⓒ 


**Non-Secure Item***Non-Secure Item***Non-Secure Item***Non-Secure Item**
**ISTAR Sample for Classroom Use**

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 3 | **Tier:** 2 |
| **Key:** B | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.3.C.1**<br>Add and subtract whole numbers fluently within 1000. | **Content Connector: 3.C.1.a.1**<br>Adding and subtracting whole numbers. |

Subtract

$$\begin{array}{r} 55 \\ -\,12 \\ \hline \end{array}$$

(A) 33

(B) 43

(C) 67

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 3 | **Tier:** 3 |
| **Key:** C | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.3.C.1**<br>Add and subtract whole numbers fluently within 1000. | **Content Connector: 3.C.1.a.1**<br>Adding and subtracting whole numbers. |

Add.

$$\begin{array}{r} 463 \\ +\,55 \\ \hline \end{array}$$

(A) 408

(B) 418

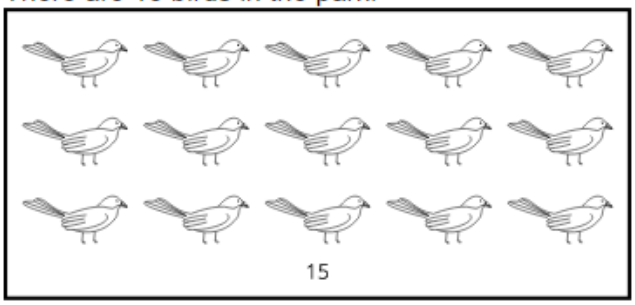
(C) 518

# Grade 4 Mathematic Samples

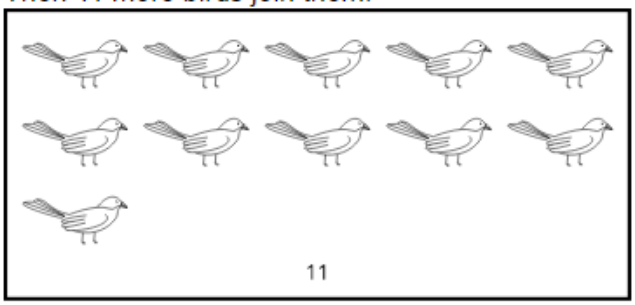
**Non-Secure Item***Non-Secure Item***Non-Secure Item***Non-Secure Item**
**ISTAR Sample for Classroom Use**

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 4 | **Tier:** 1 |
| **Key:** C | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.4.AT.1**<br>Solve real-world problems involving addition and subtraction of multi-digit whole numbers (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem). | **Content Connector: 4.AT.1.a.1**<br>Solve or solve and check one- or two-step word problems requiring addition, subtraction. |

There are 15 birds in the park.

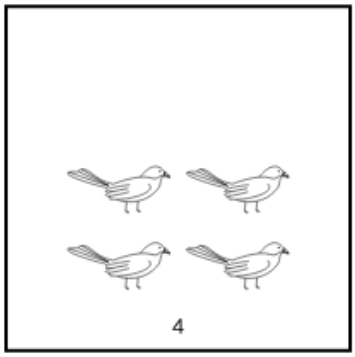



Then 11 more birds join them.

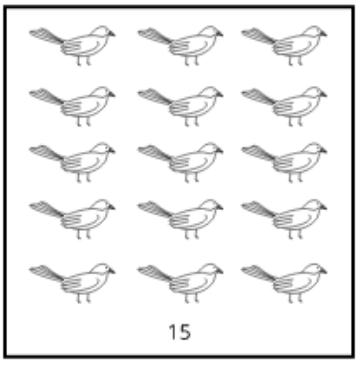



How many birds are there in all?

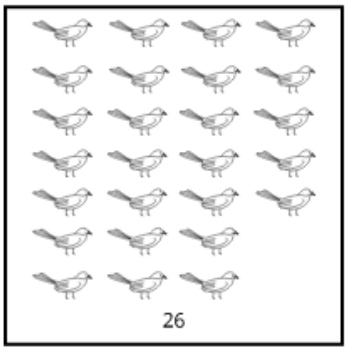
A




B




C



| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 4 | **Tier:** 2 |
| **Key:** A, C | **DOK:** 3 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.4.AT.1**<br>Solve real-world problems involving addition and subtraction of multi-digit whole numbers (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem). | **Content Connector: 4.AT.1.a.1**<br>Solve or solve and check one- or two-step word problems requiring addition, subtraction. |

The following is a two-part question. Answer Part A. Then answer Part B.

**PART A**

Rachel has 90 gold stars. She gives 20 gold stars to her friend.

Solve the equation to find how many gold stars Rachel has left.

$90 - 20 = ?$

(A) 70

(B) 110

(C) 120

**PART B**

Rachel has 90 gold stars. She gives 20 gold stars to her friend.

Which equation can you use to check that the number of gold stars Rachel has left is correct?

(A) $90 + 20 = \square$

(B) $\square - 20 = 90$

(C) $\square + 20 = 90$

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 4 | **Tier:** 3 |
| **Key:** A | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.4.AT.1**<br>Solve real-world problems involving addition and subtraction of multi-digit whole numbers (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem). | **Content Connector: 4.AT.1.a.1**<br>Solve or solve and check one- or two-step word problems requiring addition, subtraction. |

The elevation of South Bend is 208 meters.

The elevation of Indianapolis is 222 meters.

Complete the sentence.

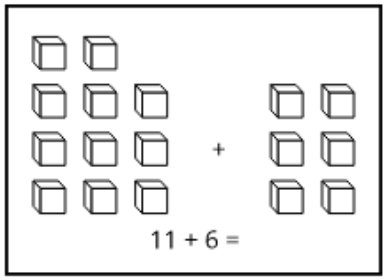
The elevation of Indianapolis is

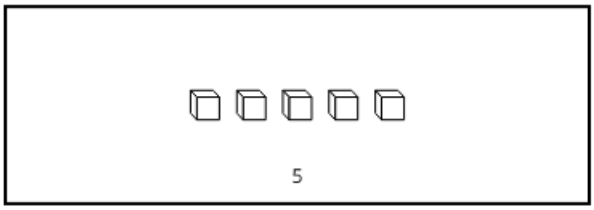
| | |
|---|---|
| ○ | **14** |
| ○ | **106** |
| ○ | **430** |

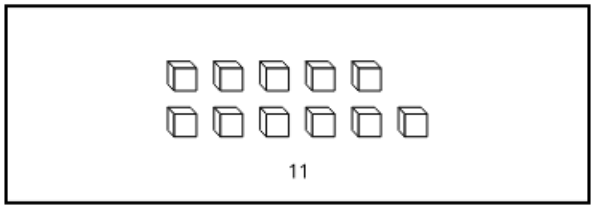
meters higher than the elevation of South Bend.

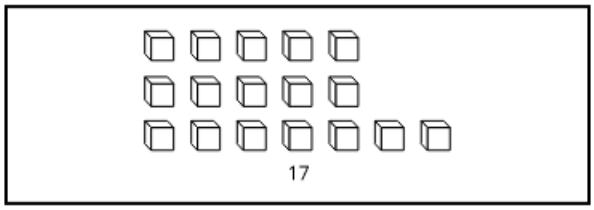
| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 4 | **Tier:** 1 |
| **Key:** C | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.4.C.1**<br>Add and subtract multi-digit whole numbers fluently using a standard algorithmic approach. | **Content Connector: 4.C.1.a.1**<br>Grouping up to 10 objects with another set of up to 10 objects, and determining the final result. |

If you add the cubes, how many are in all?

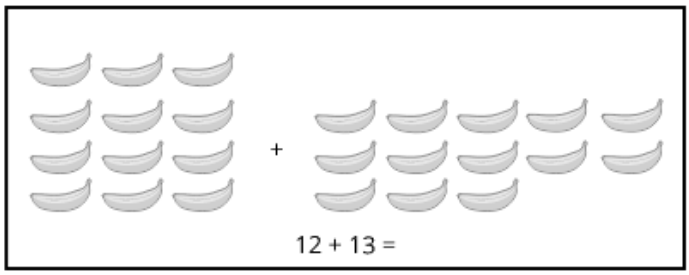



Ⓐ 


Ⓑ 


Ⓒ 

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 4 | **Tier:** 2 |
| **Key:** C | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.4.C.1**<br>Add and subtract multi-digit whole numbers fluently using a standard algorithmic approach. | **Content Connector: 4.C.1.a.1**<br>Grouping up to 10 objects with another set of up to 10 objects, and determining the final result. |




How many bananas are there altogether?

(A) 1 banana

(B) 13 bananas

(C) 25 bananas

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 4 | **Tier:** 3 |
| **Key:** B | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.4.C.1**<br>Add and subtract multi-digit whole numbers fluently using a standard algorithmic approach. | **Content Connector: 4.C.1.a.1**<br>Grouping up to 10 objects with another set of up to 10 objects, and determining the final result. |

Ann works in a bakery. She has 102 pounds of flour in a bin.

During the day, Ann uses 31 pounds of flour.

How much flour is left in the bin at the end of the day?

(A) 31 pounds

(B) 71 pounds

(C) 133 pounds

# Grade 5 Mathematics Samples

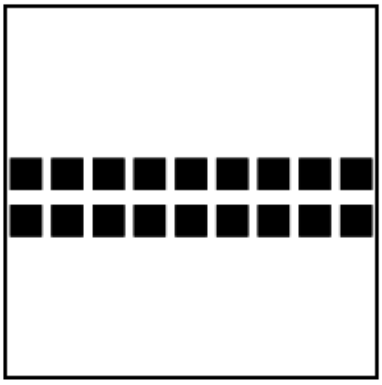
**Sample Item Information for Teachers**

**Non-Secure Item***Non-Secure Item***Non-Secure Item***Non-Secure Item**

**ISTAR Sample for Classroom Use**

| | |
|---|---|
| **Grade:** 5 | **Tier:** 1 |
| **Key:** C | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.5.C.1**<br>Multiply multi-digit whole numbers fluently using a standard algorithmic approach. | **Content Connector: 5.C.1.a.1**<br>Use fact families to help multiply factors up to 10 (0-10). |

What is $2 \times 9$ ?



(A) 7

(B) 11

(C) 18

**Sample Item Information for Teachers**

| | |
|---|---|
| **Grade:** 5 | **Tier:** 2 |
| **Key:** C | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.5.C.1**<br>Multiply multi-digit whole numbers fluently using a standard algorithmic approach. | **Content Connector: 5.C.1.a.1**<br>Use fact families to help multiply factors up to 10 (0-10). |

Multiply

$$\begin{array}{r} 12 \\ \times 3 \\ \hline \end{array}$$

(A) 9

(B) 15

(C) 36

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 5 | **Tier:** 3 |
| **Key:** C | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.5.C.1**<br>Multiply multi-digit whole numbers fluently using a standard algorithmic approach. | **Content Connector: 5.C.1.a.1**<br>Use fact families to help multiply factors up to 10 (0-10). |

Multiply.

$18 \times 10$

(A) 8

(B) 28

(C) 180

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 5 | **Tier:** 1 |
| **Key:** B | **DOK:** 1 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.5.M.1**<br>Convert among different-sized standard measurement units within a given measurement system, and use these conversions in solving multi-step real-world problems. | **Content Connector: 5.M.1.a.1**<br>Convert measurements of time. (day in a week, hours in a day, months in a year, minutes in an hour, seconds in a minute) |

Jill's family camps for 1 week at the start of April.

How many days do they camp?

A


B


C

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 5 | **Tier:** 2 |
| **Key:** B | **DOK:** 1 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.5.M.1**<br>Convert among different-sized standard measurement units within a given measurement system, and use these conversions in solving multi-step real-world problems. | **Content Connector: 5.M.1.a.1**<br>Convert measurements of time. (day in a week, hours in a day, months in a year, minutes in an hour, seconds in a minute) |

For Maria's pickle recipe, she keeps cucumbers in the pickling liquid for exactly 1 day.

How many hours do the cucumbers stay in the liquid?

(A) 12

(B) 24

(C) 36

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 5 | **Tier:** 3 |
| **Key:** A2, B1 | **DOK:** 3 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.5.M.1**<br>Convert among different-sized standard measurement units within a given measurement system, and use these conversions in solving multi-step real-world problems. | **Content Connector: 5.M.1.a.1**<br>Convert measurements of time. (day in a week, hours in a day, months in a year, minutes in an hour, seconds in a minute) |

Match the time in each row to **ONE** other time that means the same thing.

Choose **ONE** per row.

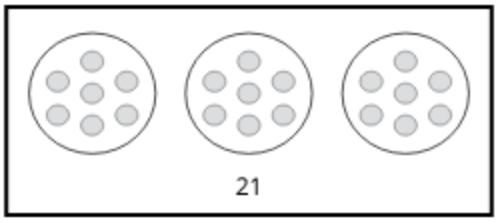
| | 30 days | 60 seconds |
|---|---|---|
| 1 minute | ○ | ○ |
| 1 month | ○ | ○ |

# Grade 6 Mathematics Samples

**Non-Secure Item***Non-Secure Item***Non-Secure Item***Non-Secure Item**
**ISTAR Sample for Classroom Use**

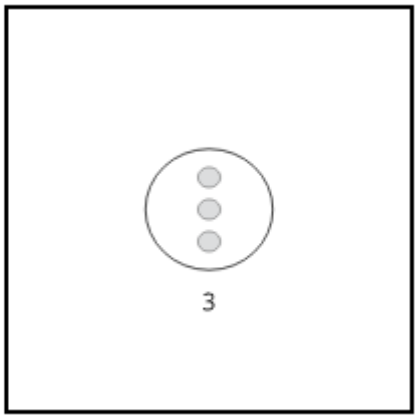
| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 6 | **Tier:** 1 |
| **Key:** C | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.6.C.1**<br>Divide multi-digit whole numbers fluently using a standard algorithmic approach. | **Content Connector: 6.C.1.a.1**<br>Divide multi-digit whole numbers |

Matt has 21 grapes. He divides them equally onto 3 plates.

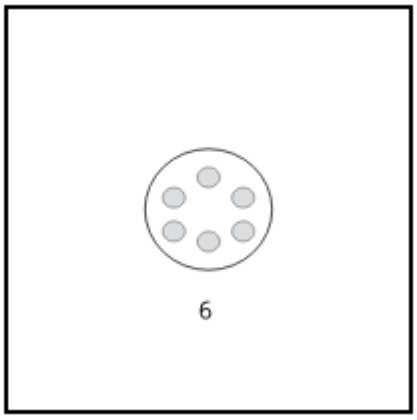



How many grapes are on each plate?

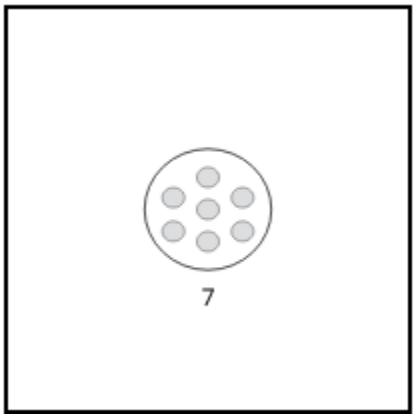
A




B




C



| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 6 | **Tier:** 2 |
| **Key:** A1; B2; B3 | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.6.C.1**<br>Divide multi-digit whole numbers fluently using a standard algorithmic approach. | **Content Connector: 6.C.1.a.1**<br>Divide multi-digit whole numbers. |

Divide. Choose **ONE** value that makes each equation true.

| | 5 | 6 |
|---|---|---|
| 55 ÷ 11 = ? | ○ | ○ |
| 60 ÷ 12 = ? | ○ | ○ |
| 72 ÷ 12 = ? | ○ | ○ |

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 6 | **Tier:** 3 |
| **Key:** A | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.6.C.1**<br>Divide multi-digit whole numbers fluently using a standard algorithmic approach. | **Content Connector: 6.C.1.a.1**<br>Divide multi-digit whole numbers. |

Divide.

105 ÷ 21

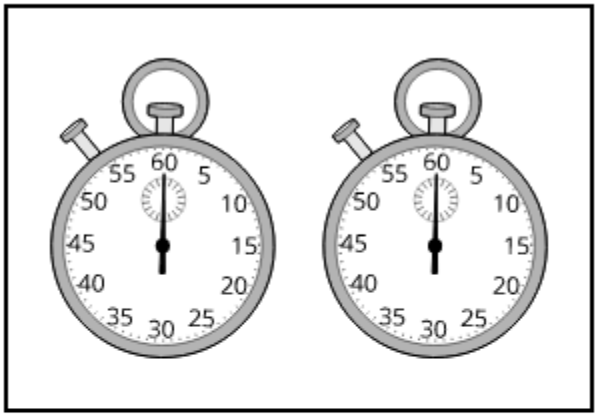
(A) 5

(B) 84

(C) 126

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 6 | **Tier:** 1 |
| **Key:** C | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.6.GM.1**<br>Convert between measurement systems (English to metric and metric to English) given conversion factors, and use these conversions in solving real-world problems. | **Content Connector: 6.GM.1.a.1**<br>Complete a conversion table for length and time. |

Each stopwatch shows 1 minute.




How many seconds are in 2 minutes?

(A) 2 seconds

(B) 60 seconds

(C) 120 seconds

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 6 | **Tier:** 2 |
| **Key:** B | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.6.GM.1**<br>Convert between measurement systems (English to metric and metric to English) given conversion factors, and use these conversions in solving real-world problems. | **Content Connector: 6.GM.1.a.1**<br>Complete a conversion table for length and time. |

The table shows the number of centimeters that equals each number of inches.

| Inches | Centimeters |
|---|---|
| 1 | 2.54 |
| 2 | 5.08 |
| 3 | ? |

How many centimeters equal 3 inches?

(A) 2.54 centimeters

(B) 7.62 centimeters

(C) 15.24 centimeters

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 6 | **Tier:** 3 |
| **Key:** B, A | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.6.GM.1**<br>Convert between measurement systems (English to metric and metric to English) given conversion factors, and use these conversions in solving real-world problems. | **Content Connector: 6.GM.1.a.1**<br>Complete a conversion table for length and time |

**The following is a two-part question. Answer Part A. Then answer Part B.**

The table shows the number of yards that equal different numbers of meters.

| Yards | Meters |
|---|---|
| ? | 1 |
| 2.18 | 2 |
| 3.27 | 3 |

**PART A**

How many yards are in 1 meter?

(A) 0.75 yard

(B) 1.09 yard

(C) 2.18 yards

**PART B**

Which equation could you use to find the number of yards in 1 meter?

(A) $2.18 \div 2 = ?$

(B) $3.27 \div 2 = ?$

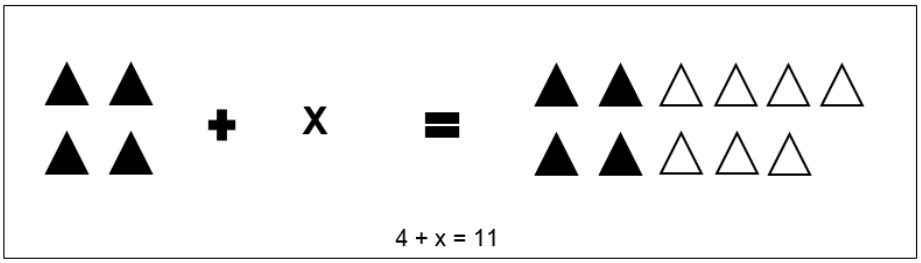
(C) $2 \div 2.18 = ?$

# Grade 7 Mathematics Samples

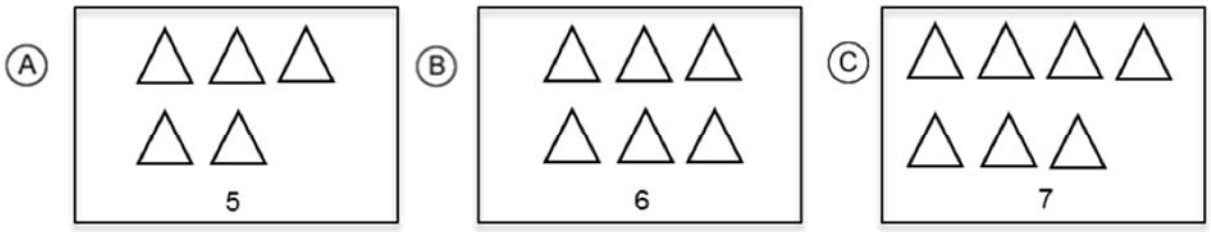
**Non-Secure Item***Non-Secure Item***Non-Secure Item***Non-Secure Item**
**ISTAR Sample for Classroom Use**

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 7 | **Tier:** 1 |
| **Key:** C | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.7.AF.2**<br>Solve equations of the form px + q = r and p(x + q) = r fluently, where p, q, and r are specific rational numbers. Represent real-world problems using equations of these forms and solve such problems. | **Content Connector: 7.AF.2.a.1**<br>Solve equations with 1 variable based on real-world problems. |

The diagram shows 4 + x = 11.




What number can you use for x in the equation?



| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 7 | **Tier:** 2 |
| **Key:** A2; B1 | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.7.AF.2**<br>Solve equations of the form px + q = r and p(x + q) = r fluently, where p, q, and r are specific rational numbers. Represent real-world problems using equations of these forms and solve such problems. | **Content Connector: 7.AF.2.a.1**<br>Solve equations with 1 variable based on real-world problems. |

What is the value of x in each equation? Choose **ONE** answer for each row.

| | $x = 2$ | $x = 3$ |
|---|---|---|
| $2x - 1 = 5$ | ○ | ○ |
| $2x + 1 = 5$ | ○ | ○ |

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 7 | **Tier:** 3 |
| **Key:** B, C | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.7.AF.2**<br>Solve equations of the form px + q = r and p(x + q) = r fluently, where p, q, and r are specific rational numbers. Represent real-world problems using equations of these forms and solve such problems. | **Content Connector: 7.AF.2.a.1**<br>Solve equations with 1 variable based on real-world problems. |

It cost $10 per hour plus a $5 deposit to rent a bike. Jaye pays a total of $75 to rent a bike.

For how many hours did Jaye rent the bike?

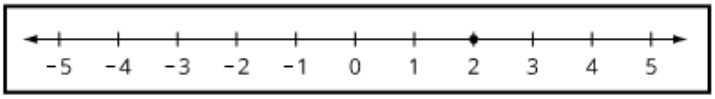
(A) 5 hours

(B) 7 hours

(C) 8 hours

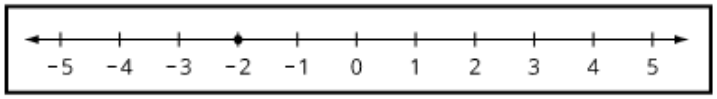
| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 7 | **Tier:** 1 |
| **Key:** A | **DOK:** 1 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.7.C.1**<br>Understand p + q as the number located a distance \|q\| from p, in the positive or negative direction, depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts. | **Content Connector: 7.C.1.a.1**<br>Add a positive and negative integer. |

The number line shows a point plotted at 2.



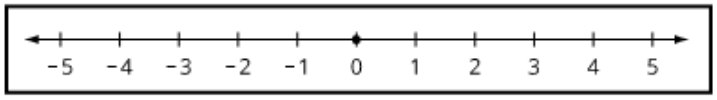

Which number line shows a point plotted at the opposite of 2?

A



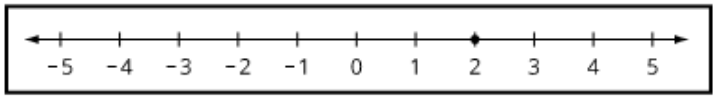

−2

B




0

C




2

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 7 | **Tier:** 2 |
| **Key:** B | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.7.C.1**<br>Understand p + q as the number located a distance \|q\| from p, in the positive or negative direction, depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts. | **Content Connector: 7.C.1.a.1**<br>Add a positive and negative integer. |

Add.

$-11 + 11$

Use the number line to help, if necessary.


(A) $-22$

(B) 0

(C) 22

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 7 | **Tier:** 3 |
| **Key:** A1; B2 | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.7.C.1**<br>Understand p + q as the number located a distance \|q\| from p, in the positive or negative direction, depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts. | **Content Connector: 7.C.1.a.1**<br>Add a positive and negative integer |

Find each sum. Choose **ONE** answer in each row

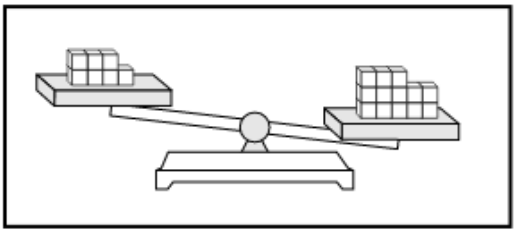
| | -3 | 7 |
|---|---|---|
| $-8+5$ | ○ | ○ |
| $-2+9$ | ○ | ○ |

# Grade 8 Mathematics Samples

**Non-Secure Item***Non-Secure Item***Non-Secure Item***Non-Secure Item**
**ISTAR Sample for Classroom Use**

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 8 | **Tier:** 1 |
| **Key:** A | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.8.AF.1**<br>Solve linear equations with rational number coefficients fluently, including equations whose solutions require expanding expressions using the distributive property and collecting like terms. Represent real-world problems using linear equations and inequalities in one variable and solve such problems. | **Content Connector: 8.AF.1.a.1**<br>Solve linear equations with 1 variable. |

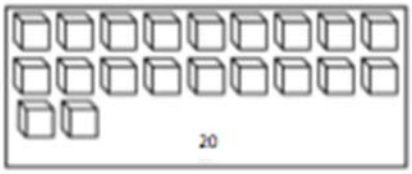
One side of the scale has 7 cubes. The other side of the scale has 13 cubes.



How many cubes are needed in the left side to balance the scale?

Ⓐ 


Ⓑ 


Ⓒ 

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 8 | **Tier:** 2 |
| **Key:** A | **DOK:** 1 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.8.AF.1**<br>Solve linear equations with rational number coefficients fluently, including equations whose solutions require expanding expressions using the distributive property and collecting like terms. Represent real-world problems using linear equations and inequalities in one variable and solve such problems. | **Content Connector: 8.AF.1.a.1**<br>Solve linear equations with 1 variable. |

Look at the equation

3 x ☐ = 9

| | |
|---|---|
| ○ | 3 |
| ○ | 6 |
| ○ | 27 |

Which number makes the equation true?

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 8 | **Tier:** 3 |
| **Key:** A, C | **DOK:** 3 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.8.AF.1**<br>Solve linear equations with rational number coefficients fluently, including equations whose solutions require expanding expressions using the distributive property and collecting like terms. Represent real-world problems using linear equations and inequalities in one variable and solve such problems. | **Content Connector: 8.AF.1.a.1**<br>Solve linear equations with 1 variable. |

The following is a two-part item. Answer Part A. Then answer Part B.

**Part A**

A math class is playing a game. The first team to have each student correctly answer 4 questions wins a prize. This means that a team must answer 36 questions correctly.

Solve the equation $4 \times s = 36$ for $s$ to find how many students are on each team.

(A) 9

(B) 32

(C) 40

**Part B**

Which equation could you use to check your answer?

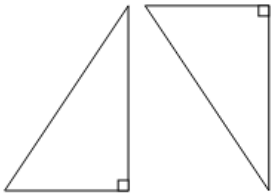
(A) $4 + 32 = 36$

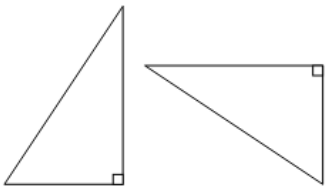
(B) $40 - 4 = 36$

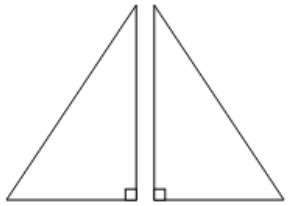
(C) $4 \times 9 = 36$

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 8 | **Tier:** 1 |
| **Key:** B | **DOK:** 1 *Link to DOK Wheel* |
| **Indiana Academic Standard:**<br>**MA.8.GM.3**<br>Verify experimentally the properties of rotations, reflections, and translations, including: lines are mapped to lines, and line segments to line segments of the same length; angles are mapped to angles of the same measure; and parallel lines are mapped to parallel lines. | **Content Connector: 8.GM.3.a.1**<br>Recognize a rotation, reflection, or translation of a figure. |

Which pair of figures shows a rotation?

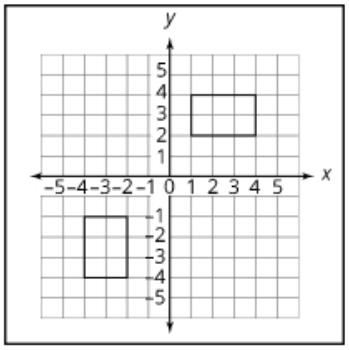
A 

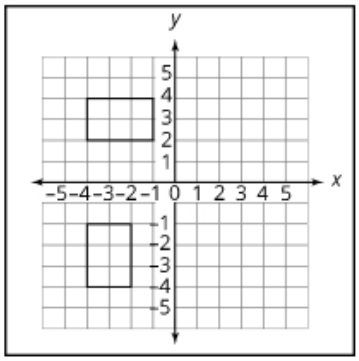
B 

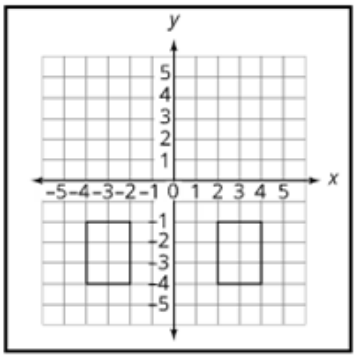
C 

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 8 | **Tier:** 2 |
| **Key:** C | **DOK:** 1 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.8.GM.3**<br>Verify experimentally the properties of rotations, reflections, and translations, including: lines are mapped to lines, and line segments to line segments of the same length; angles are mapped to angles of the same measure; and parallel lines are mapped to parallel lines. | **Content Connector: MA.8.GM.3.a.1**<br>Recognize a rotation, reflection, or translation of a figure. |

Which figure shows a translation?

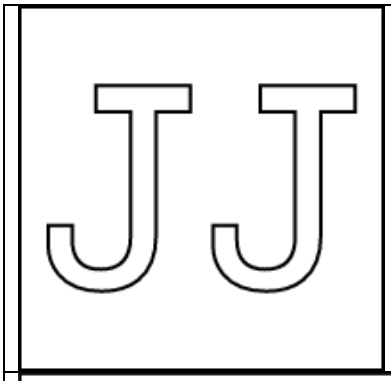
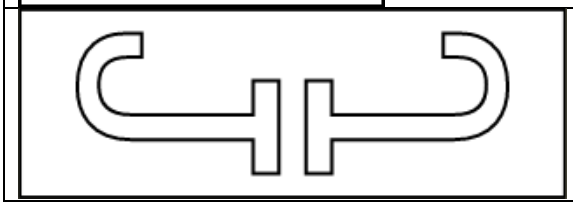
A 


B 


C 

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 8 | **Tier:** 3 |
| **Key:** A2; B1 | **DOK:** 1 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.8.GM.3**<br>Verify experimentally the properties of rotations, reflections, and translations, including: lines are mapped to lines, and line segments to line segments of the same length; angles are mapped to angles of the same measure; and parallel lines are mapped to parallel lines. | **Content Connector: MA .8.GM.3.a.1**<br>Recognize a rotation, reflection, or translation of a figure. |

Which figure shows a reflection, and which figure shows a translation?
Choose **ONE** answer in each row.

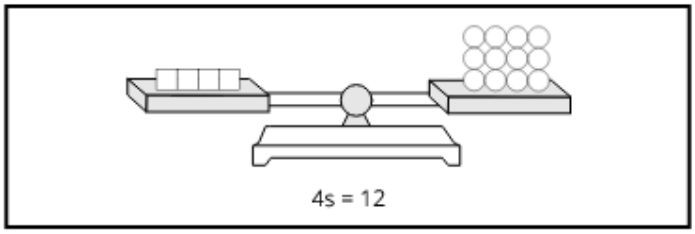
| | Reflection | Translation |
|---|---|---|
|  | | |
|  | | |

# Grade10 Mathematics Samples

**Non-Secure Item***Non-Secure Item***Non-Secure Item***Non-Secure Item**
**ISTAR Sample for Classroom Use**

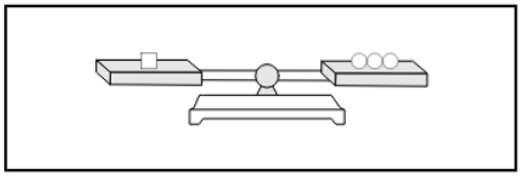
| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 10 | **Tier:** 1 |
| **Key:** A | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.AI.L.11**<br>Solve equations and formulas for a specified variable, including equations with coefficients represented by variables. | **Content Connector: MA.AI.L.11.a.1**<br>Solve linear equations with 1 variable. |

The scale shows that 4 squares weigh the same as 12 circles.



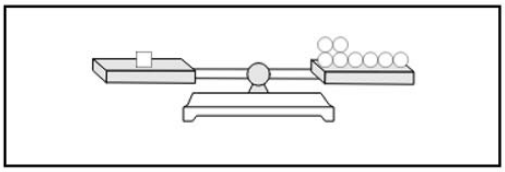

Which scale shows how much 1 square weighs?

Ⓐ



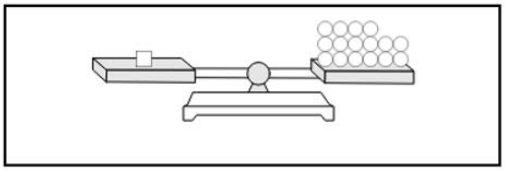
$s = 3$

Ⓑ



$s = 8$

Ⓒ



$s = 16$

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 10 | **Tier:** 2 |
| **Key:** A, C | **DOK:** 3 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.AI.L.11**<br>Solve equations and formulas for a specified variable, including equations with coefficients represented by variables. | **Content Connector: MA.AI.L.11.a.1**<br>Solve linear equations with 1 variable. |

The following is a two-part item. Answer Part A. Then answer Part B.

**Part A**

Solve for $x$.

$6x = 48$

(A) 8

(B) 42

(C) 54

**PART B**

Which equation could you use to check your answer?

(A) $42+6=48$

(B) $54-6=48$

(C) $8\times6=48$

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 10 | **Tier:** 3 |
| **Key:** A1; B2 | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: MA.AI.L.11**<br>Solve equations and formulas for a specified variable, including equations with coefficients represented by variables. | **Content Connector: MA.AI.L.11.a.1**<br>Solve linear equations with 1 variable. |

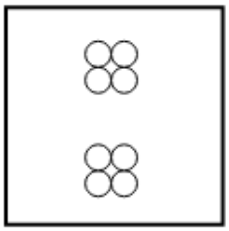
Solve each equation for x. Choose **ONE** answer in each row.

| | $x = 2$ | $x = 81$ |
|---|---|---|
| $2.5x = 5$ | ○ | ○ |
| $x \div 9 = 9$ | ○ | ○ |

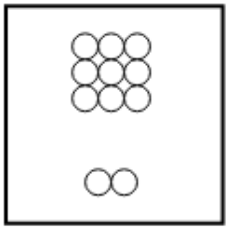
| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 10 | **Tier:** 1 |
| **Key:** B | **DOK:** 1 *Link to DOK Wheel* |
| **Indiana Academic Standard: AI.RNE.2**<br>Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational. | **Content Connector: AI.RNE.2.a.1**<br>Identify the pattern for the sum or product for combinations of rational numbers. |

Which image shows another way of writing 11?

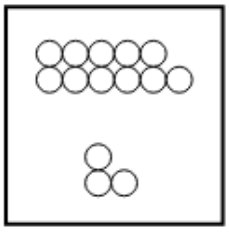
A



B



C



| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 10 | **Tier:** 2 |
| **Key:** B | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: AI.RNE.2**<br>Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational. | **Content Connector: AI.RNE.2.a.1**<br>Identify the pattern for the sum or product for combinations of rational numbers. |

Which expression shows another way to write 37?

(A) 27 + 1

(B) 30 + 7

(C) 37 + 7

| Sample Item Information for Teachers | |
|---|---|
| **Grade:** 10 | **Tier:** 3 |
| **Key:** A | **DOK:** 2 *Link to DOK Wheel* |
| **Indiana Academic Standard: AI.RNE.2**<br>Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational. | **Content Connector: AI.RNE.2.a.1**<br>Identify the pattern for the sum or product for combinations of rational numbers. |

Which expression shows another way to write 48?

(A) $6 \times 8$

(B) $12 + 4$

(C) $48 \times 10$